Reg.No.:								

VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN
[AUTONOMOUS INSTITUTION AFFILIATED TO ANNA UNIVERSITY, CHENNAI]
Elayampalayam – 637 205, Tiruchengode, Namakkal Dt., Tamil Nadu.

Question Paper Code: 4001

B.E. / B.Tech. DEGREE END-SEMESTER EXAMINATIONS – DECEMBER 2019
First Semester
Computer Science and Engineering
U15CH101 – CHEMISTRY
(Common to Electrical and Electronics Engineering, Electronics and Communication Engineering, Information Technology & Biotechnology)
(Regulation 2015)

Time : Three Hours Maximum : 100 Marks

Answer ALL the questions

PART – A

(10 x 2 = 20 Marks)

1. What is standard Hydrogen Electrode?
2. List any two applications of solar cells.
3. State any two properties of nanoparticles based on size.
4. What is the difference between bulk material and Nanomaterial?
5. In the free radical initiated chain growth polymerization process, what is the exact role of the solvent?
6. What is co-polymerization?
7. State Clapeyron Clausius equation.
8. Define enthalpy.
9. List any two factors that influence corrosion.
10. Iron, when exposed to open air, gets corroded faster in Chennai than in Thiruchengode. What could be the reason behind this?

PART – B

(5 x 16 = 80 Marks)

11. a) i. Explain the working principle and applications of lithium battery ($LiTiS_2$). (8)

ii. "Hydrogen oxygen fuel cell can produce drinking water of potable quality." Explain. (8)

(OR)

b) Explain the working principle of Lead-acid battery with neat diagram.

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12. a) i. "Melting point and optical properties of nanomaterials depend on the size of Nanoparticles." Justify this statement by taking suitable examples. (8)

ii. How nanomaterial play crucial role in drug delivery? What are the basic essential properties desirable for nanomaterials for drug delivery? (8)

(OR)

b) i. How nanoparticles are synthesized using molecular self-assembly? Explain how the hydrothermal process is suitable for the synthesis of nanostructures with different morphologies. (8)

ii. Explain the preparation of nanoparticles by Arc discharge method with suitable properties. (8)

13. a) i. Explain in detail the mechanistic aspects involved in chain and step growth polymerization. (10)

ii. State at least 4 essential differences between thermo set and thermo plastics with 2 examples each. (6)

(OR)

b) i. Outline the synthesis of poly acetylene and explain the mechanism of electronic conduction in this polymer. (10)

ii. State at least 6 differences between chain growth and step growth polymerization process. (6)

14. a) i. Derive an expression for Gibbs Helmholtz equation. (8)

ii. Define the term standard free energy. (2)

iii. Explain the relation between free energy and spontaineity. (6)

(OR)

b) i. Derive the Maxwell's thermodynamic relation based on the first law of thermodynamics. (8)

ii. Derive Vant Hoff isotherm equation. (8)

15. a) i. Explain how material selection and design aspects influence corrosion. (8)

ii. Explain any two methods to control corrosion. (8)

(OR)

b) Explain the process of electroplating (Au on Cu) and electroless plating with suitable diagrams.
